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Unclassified Summary to the Chairman, Legislation and National Security Subcommittee, Committee on Government Operations, House of Representatives

10

May 1990

STRATEGIC DEFENSE INITIATIVE PROGRAM

Basis for Reductions in Estimated Cost of Phase I

GAO/NSIAD-90-173

GAO

United States
General Accounting Office
Washington, D.C. 20548

National Security and
International Affairs Division

B-223094

May 9, 1990

The Honorable John Conyers, Jr.
Chairman, Legislation and National
Security Subcommittee
Committee on Government Operations
House of Representatives

Dear Mr. Chairman:

In response to your request, we have reviewed the Strategic Defense Initiative Organization's reasons for cost reductions between the June 1987 and October 1988 cost estimates for the Phase I Strategic Defense System and the credibility of the October 1988 estimate of $69.1 billion. On May 1, 1990, we issued a classified report on our findings. This is an unclassified summary of our classified report.

As requested, we plan no further distribution of this summary until 7 days after its issue date. At that time we will send copies to chairmen of appropriate committees; the Secretaries of Defense, the Air Force, and the Army; the Directors, Strategic Defense Initiative Organization and Office of Management and Budget; and other interested parties.

Please contact me on (202) 275-4268 if you or your staff have any questions concerning this summary. Other major contributors to this summary are listed in appendix I.

Sincerely yours,

Nancy R. Kingsbury

Nancy R. Kingsbury
Director
Air Force Issues

Summary

Purpose

In June 1987 the Strategic Defense Initiative Organization (SDIO) estimated that the Phase I Strategic Defense System would cost between $75.6 billion and $145.7 billion. In October 1988 SDIO reduced its estimate to $69.1 billion.

The Chairman, Legislation and National Security Subcommittee, House Committee on Government Operations, asked GAO to (1) assess the credibility of the October 1988 estimate of $69.1 billion and (2) determine the reasons for the cost reductions. To accomplish these objectives, the Chairman agreed that GAO would limit its review to the June 1987 and October 1988 estimates for four of the nine phase I elements—the Space-Based Interceptor (SBI); Ground-Based Surveillance and Tracking System (GSTS); Battle Management and Command, Control, and Communications (BM/C^3); and launch systems.

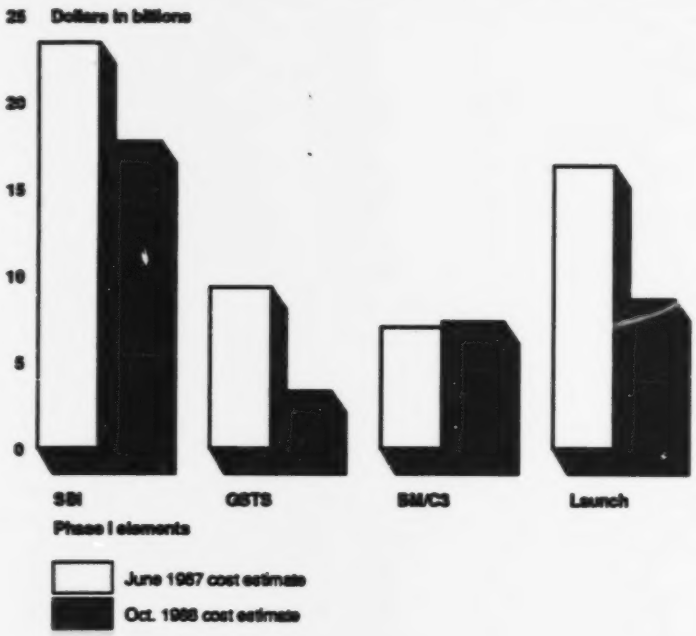
Background

Since the design and technical characteristics needed for the phase I system were uncertain, SDIO prepared two cost estimates in June 1987—one low estimate and one high estimate. In October 1988 SDIO prepared only a single cost estimate.

To examine the reasons for the cost reductions between the June 1987 and October 1988 cost estimates, GAO used the June 1987 high estimates for GSTS, BM/C^3, and launch systems because of the similarity with the system features in October 1988. However, GAO used the June 1987 low estimate for the SBI comparison because the SBI technical characteristics used in that estimate were more similar to those used in the October 1988 estimate.

The four elements were estimated to cost $56.2 billion in June 1987 and $36.9 billion in October 1988, a $19.3 billion reduction. Figure 1 shows the change for each of the four elements.

Figure 1: Comparison of SDIO's June 1987 and October 1988 Cost Estimates for Phase I Elements GAO Reviewed



The $69.1 billion estimate for the phase I system is only a portion of the cost of the total Strategic Defense Initiative (SDI) program. It is only the estimated cost in 1988 dollars to develop, produce, and deploy the phase I system. It does not include the cost of any follow-on phases, the cost for operating and maintaining the system once it is deployed, or an allowance for inflation that may occur between October 1988 and the time the phase I system is deployed.

Results in Brief

The October 1988 cost estimate was appropriately prepared using standard Department of Defense cost estimating models and methodology, but GAO found that SDIO had made some errors that understated the cost by $2.1 billion. SDIO may also have used overly optimistic assumptions in preparing the SBI estimate, which understated it by at least $5 billion.

The $19.3 billion reduction in estimated phase I costs for the four elements resulted primarily from (1) reducing quantities, (2) changing technical characteristics, (3) changing cost estimating models, and

(4) reducing support costs such as training, spare parts, and launch systems. About $2 billion of the reduction in support costs was due to deferring development costs for the Advanced Launch System to subsequent program phases.

Principal Findings

Credibility of October 1988 Estimate

GAO's review indicated that SDIO used appropriate methods to prepare the $69.1 billion estimate, but it may have used overly optimistic assumptions. The estimate was derived primarily from parametric cost estimating models. These models, which forecast a system's cost based on the actual costs of similar systems, are used to estimate costs of future systems, such as phase I systems, until detailed design information is available. GAO replicated portions of the October 1988 estimate and found some errors that understated costs by $2.1 billion.

Even though SDIO applied proper cost estimating methods, the credibility of the estimate largely depends on the validity of assumptions used in the estimate. GAO and the Department of Defense's Cost Analysis Improvement Group believe that some of the assumptions used by SDIO may be too optimistic. For example, SDIO assumed that improvements in manufacturing technology would be available to reduce the cost of producing SBI significantly. SDIO has research programs to provide the needed improvements, but if the programs are not successful, SBI hardware costs could increase as much as $5 billion based on SDIO's estimate, or $12.9 billion based on an independent cost estimate prepared by a contractor for SDIO. According to the Cost Analysis Improvement Group, achieving these improvements, although not impossible, will be a great challenge.

The $69.1 billion estimate includes a cost reserve of $7.6 billion, or 11 percent. This cost reserve is intended to cover future increases, for example, those changes that result from technical or schedule changes. Whether this reserve is adequate will largely depend on the extent to which the estimate's assumptions prove to be correct. The estimate also includes a performance cost reserve of $1.1 billion for additional quantities of the system elements that may be needed to meet military requirements.

SDIO's $69.1 billion estimate represents only a snapshot at a point in time that is very early in the development cycle of the Phase I Strategic Defense System. Department of Defense experience has shown that such early estimates usually increase for a variety of reasons.

Reasons for Cost Changes

As shown in table 1, the October 1988 cost estimates for the four phase I elements that GAO reviewed were $19.3 billion lower than the June 1987 estimates. The acquisition and deployment cost reductions were due to quantity changes of $8.4 billion, technical changes of $1.2 billion, and support changes of $9.8 billion. These cost reductions were offset by an increase of $0.1 billion due to cost estimating model changes.

Table 1: Analysis of Cost Changes for Four Phase I Elements

Dollars in billions

Reasons for cost changes	SBI	GSTS	BM/C³	Launch	Total
Quantity	$−6.6	$−1.7	•	•	$−8.4
Technical	1.6	−2.8	•	•	−1.2
Estimating	1.2	−1.1	•	•	0.1
Support	−1.9	−0.4	0.3	−7.8	−9.8
Total	**$−5.8**	**$−6.0**	**$0.3**	**$−7.8**	**$−19.3**

Note: Totals do not add due to rounding.

Quantity Changes

Between June 1987 and October 1988, SDIO determined that different quantities of SBI and GSTS satellites would be needed for the phase I system, which reduced costs by about $8.4 billion.

Technical Changes

On the basis of continuing concept and design studies, SDIO changed some of the SBI and GSTS technical characteristics, which reduced costs by about $1.2 billion.

Estimating Changes

Estimating changes resulted in an increase of $114 million between the June 1987 and October 1988 estimates. The changes included using different cost models, adding cost reserves to the SBI estimate, and correcting an error in the June 1987 GSTS estimate.

The changes in cost estimating models resulted in reductions of $2.7 billion. The Air Force added $3.4 billion to cover possible future cost increases for SBI. Also, SDIO corrected an error in the June 1987 GSTS estimate that resulted in a reduction of $519 million.

Support Changes

Reductions in support costs accounted for $9.8 billion of the difference between the two estimates. The primary reduction was $7.8 billion for the cost of launching space-based systems, which resulted from decreases in the quantity and weight of satellites to be launched and the use of less expensive launch systems.

By switching from the Advanced Launch System to a modified Peacekeeper, SDIO avoided the $2 billion development cost for the Advanced Launch System during phase I. SDIO still supports development of the system for future phases.

Recommendations

GAO's report is not making any recommendations.

Agency Comments

As requested, GAO did not obtain official agency comments. However, GAO discussed a draft of this report with SDIO officials and incorporated their comments where appropriate.

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